Minutes of spin meeting 04/23/08

Nick presented his BtA matching simulations done in 06. It was believed that in the past the BtA could not provide both optical and dispersion match the same time. Thomas recalled that Jim Niederer suggested to change dispersion in Booster (very hard) or AGS (e.g., using γ_t quads). Nick showed that with the partial snakes presence, there is no difficulty in matching the BtA to the AGS at injection. Thomas commented that partial snakes could change the AGS dispersion in the favor of matching. Nick plans to do the same exercises with regular AGS without partial snakes. After last week's meeting, Haixin got results from Mike Blaskiewicz on BtA steering test done in 1994. It showed that the optical model predicted the beam positions at various multi-wires reasonably well. Thomas commented that from these results we should not worry about excitation curves, magnet positions, if nothing changed since then. Woody said we do have some steering data with deuteron beam this run waiting for analysis. He also recalled that Paul Sampson once checked dispersion match in BtA with gold beam. Thomas suggested to use PTC code for the injection simulation. Dejan warned that one should use existing codes (MAD, SYNCH) first, then try PTC.

Leif presented the preliminary results of BtA multi-wire beam sizes as functions of Booster late intensity. The data were taken on March 9. The data were taken with all multi-wires inserted at the same time. The vertical emittance seems linearly proportional to the intensity, while the horizontal ones have more structure, probably complicated by dispersion.

Woody then updated on the status of fast tune jump method. Due to betatron tune spread and spin tune spread (from energy spread), the required tune jump time are different: 110μs for $N + \nu_x$ and 350μs for $N - \nu_x$. Thomas commented that this is due to the spin chromaticity effect. It helps polarization preservation in one case but hurts in the other one. This is actually the reason we need to go to larger tune jump amplitude (0.04). Woody presented a solution using four 8Q32 quads and FEB bump supplies. With the voltage limit of 800V, one still can reach the required jump rate and amplitude with four quads. One concern is the vacuum pipe needed.

Haixin